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EXAMINER	
PHAN, MAN U	

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/722,604	LAPPETELAINEN, ANTTI	
	Examiner	Art Unit	
	Man Phan	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 June 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4, 11-16, 18-22* is/are rejected.

7)☒ Claim(s) *5-10,17 and 23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment and Argument

1. This communication is in response to applicant's 07/02/2004 Amendment in the application of Lappetelainen for the "Adaptive transmission channel allocation method and system for ISM and unlicensed frequency bands" filed 11/27/2000. The proposed amendment to the claims has been entered and made of record. The amendment and argument has been entered and made of record. Claims 11-13, 15 have been amended. Claims 1-23 are pending in the application.

In view of applicant's amendment to amend the claims 11-13 to obviate the §112 rejections, therefore, examiner has withdrawn the rejection under 35 U.S.C §112, second paragraph.

In view of applicant's proposed corrections with respect to the claim 15, the examiner has withdrawn the objections of record.

2. Applicant's amendment and argument to the rejected claims are insufficient to distinguish the claimed invention from the cited prior arts or overcome the rejection of said claims under 35 U.S.C.103 as discussed below. Applicant's argument with respect to the rejected claims have been fully considered, but they are not persuasive for at least the following reasons:

3. Applicant's argument with respect to the rejected claims 1, 14 and 20 (Page 7, last paragraph) that the cited references do not teach the "*hopping natures of the high-speed*

connection". However, the Manny and Souissi are applied herein merely for the teaching of the communication protocol facilitates frequency hopping synchronization and supports adaptive data rate selection based upon the quality of communication on the communication channel. Frequency hopping is a desirable transmission technique because of its ability to combat frequency selective fading, avoid narrowband interference, and provide multiple communications channels (Col. 37, lines 13 plus and Col. 42, lines 31 plus). Furthermore, Soussi et al. (US#6,327,300) discloses in Figs.2&3 a flow chart and digram illustrated the steps involved in determining the mode of operation - non-frequency-hopping or frequency-hopping between a master and slave devices. In the example shown in Fig. 3, data sent using BT1 signaling represents data of a first type in a first occupied bandwidth and BT2 signaling represents data of a second type in a second occupied bandwidth wherein the first occupied bandwidth is preferably significantly less than the second occupied bandwidth. Data that could be transmitted during a transmission occupying the first bandwidth could include transmission parameters for subsequent transmissions using the second occupied bandwidth. The parameters could include data rate, modulation, frequency, hopping sequence, and bandwidth among other parameters that can be sent in the form of a table or database. If an error is detected by a receiver of the data (the master), then the data can be retransmitted in a second selected portion of the spectrum as shown in time slot 31. Data transmitted using BT3 signaling represents data of a third type in a third occupied bandwidth and wherein the third occupied bandwidth is preferably less than the first occupied bandwidth (Col. 2, lines 41 plus and Col. 7, lines 55 plus).

It is widely known in the art that the Bluetooth communication protocol operates in a 2.4 GHz Industrial Scientific and Medical (ISM) band of the unlicensed radio spectrum. This

portion of the spectrum was chosen because of its international availability and its unrestricted use. In operation, a Bluetooth device searching for services regularly scans or samples at least a subset of the 79 possible frequency hopping channels in the ISM band, to find and synchronize with an existing piconet, or perhaps to find another searching Bluetooth device with which to establish a new piconet. A data packet found in such a search contains the identity code of a master, or perhaps that of another device searching for a master. The searching device can process an identity code found in a data packet to determine a frequency hopping sequence. The frequency where the data packet was found is then located in the hopping sequence. The device can then proceed through the hopping sequence together with the master of the piconet, or a searching device that finds another device can become the master of a newly established piconet. Furthermore, as consumer electronics become more ubiquitous, personal area networks (PANs) or piconets are being employed to facilitate the use of multiple devices that can automatically synchronize and communicate with one another over the piconet. Bluetooth (BT) is one radio-frequency protocol by which electronic devices are connected to one another over short-range radio links, and operates in the unlicensed ISM (industrial, scientific, medical) band at about 2.4 to 2.5 GHz. Low power (about 1 mW) limits the range of a Bluetooth network to about 10 meters, and spread spectrum frequency hopping (changing frequencies .about.1,600 times per second) limits interference from other devices using the ISM bandwidth (e.g.: garage door openers, baby monitors, devices using a different Bluetooth piconet).

Examiner maintains that the references cited and applied in the last office actions for the rejection of the claims are maintained in this office action.

Claim Rejections - 35 USC ' 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-4, 14-15 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahany (US#5,696,903) in view of Souissi et al. (US#6,327,300).

With respect to claims 1-4, 14-15 and 20-22, both Mahany (US#5,696,903) and Souissi et al. (US#6,327,300) disclose a method and system for establishing a connection link in hierarchical communication system including a master device and slave devices. Mahany teaches in Figs. 1b,c diagrams illustrated the hierarchical communication system utilizing spread spectrum frequency hopping according to the essential features of the claims, in which the communication on the first local area network is accomplished by spread spectrum frequency hopping communication. A second local area network allows for radio communication between a portable computer device and peripheral devices with built-in transceivers utilized by the portable computer device, wherein the connection link between the computer device and peripheral devices, and the connection link among the peripheral devices being carried out in a

frequency hopping fashion (See also Figs. 28a,b, and the Abstract; Col. 37, lines 13 plus and Col. 42, lines 31 plus).

Mahany do not disclose expressly wherein a non-frequency hopping connection link is established between the peripheral devices. However, Mahany teaches a MicroLink network which is a short range local area network consisting of a portable/mobile device and one or more peripherals. Peripherals are often slaved to a single portable/mobile device, but may be shared by two or more. A Microlink Network replaces cabled connection between a portable/mobile device and associated peripherals. In a preferred embodiment, the Microlink Network is a single frequency low power network operating at 2.400 to 2.483 GHz under 15.249 of the United States Federal Communications Commissions (FCC) rules. The FCC regulations allow unlicensed communications at effective radiated power levels of approximately 500 microwatts or less. The Microlink Network is intended to provide communications between two or more devices operating within near proximity, e.g., distances of a few tens of feet (Col. 11, lines 39 plus). It's noted that a BLUETOOTH system network known as a piconet includes a single master device and up to seven active slave devices. The network topology is referred to as a star because all communication involves the master device, and it's well known in the art. In the same field of endeavor, Souissi et al. (US#6,327,300) discloses in Fig.2 a flow chart illustrated the steps involved in determining the mode of operation - non-frequency-hopping or frequency-hopping between a master and slave devices. A master 51 polls a slave 52 and the slave 52 requests a high speed channel that would employ open spectrum that is dynamically selected. Initially, it is assumed that data traffic to be sent to the master has just arrived at the slave 52 and the master is maintaining the piconet, e.g., polling the slaves (just one slave shown). When a poll by the

master 51 is not scheduled, slave 52 searches a predetermined spectrum for the best available downlink communication resources or channels. In a Bluetooth communication system, the predetermined spectrum is ideally the ISM band. Next, the master 51 polls the slave 52 by transmitting data of a first type in a first occupied bandwidth. Preferably, this transmission is of a standard Bluetooth 1.0 type transmission. The slave 51 then requests the establishment of a high-speed link with the master 52 preferably using the standard Bluetooth 1.0 type signalling and suggesting the best available downlink channel (master-to-slave) just found. The master 52 verifies the channels suggested by the slave 51. If the master 52 finds the channels suggested by the slave 51 as an acceptable uplink (slave-to-master), the master 52 acknowledges the request of the slave 51 and signals its acceptance on the new downlink channel (high-speed) channel. This high-speed channel would facilitate the transmission of data of a second type in a second occupied bandwidth wherein the second occupied bandwidth would be of variable bandwidth suitable for the transmission of the data. If the master 52 finds the channels suggested by the slave 51 as unacceptable, the master 52 will ideally search the ISM band for the best alternative channels, which are then sent to the slave 51 on the new downlink channel. In this way, the master 52 and the slave 51 may transmit on different channels ("split frequency operation") although ideally in the interest of spectral efficiency the master and slave will attempt to reuse the same channels on their first attempt. Alternatively, if the master finds the channels suggested by the slave 51 unacceptable, the master 52 will ideally search the ISM band for the best alternative channels, which are then suggested to the slave 51 on the new downlink channel. A negotiation ensues, with rules that include the options to decide to use any common channels

between the master's and the slave's proposals. Once the data is transmitted, the master and slave revert to Bluetooth 1.0 type communications (Col. 2, lines 41 plus).

One skilled in the art would have recognized the need for effectively and efficiently facilitates operating in the non-frequency-hopping fashion in an environment where the frequency-hopping fashion is also used, and would have applied Souissi's novel use of dynamic spectrum allocation for transmission of data within a frequency band into Maahany's hierarchical communications system using frequency hopping. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Souissi's method and apparatus for dynamic spectrum allocation into Mahany's hierarchical communications system using microlink, data rate switching, frequency hopping and vehicular local area networking with the motivation being to provide a method and system for allocation of an adaptive transmission channel in a piconet operating in the Bluetooth radio frequency band.

6. Claims 11-13 and 16, 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahany (US#5,696,903) in view of Souissi et al. (US#6,327,300) as applied to the claims above, and further in view of Foster, Jr. (US#5,528,623).

With respect to claims 11-13 and 16, 18-19, Mahany and Souissi disclose the claimed limitations as discussed in the paragraph 8 above. In the same field of endeavor, Foster, Jr. discloses a communications system includes at least two communications units, each communication unit including a transmitter capable of transmitting to the other unit at different power levels and on different frequencies, the power levels and frequencies of transmission being controlled by a mode control unit in response to indicators of transmission quality and

reliability, wherein the mode control unit initially establishes a minimum power output of the transmitter at a fixed frequency to establish communications and if reliable communications cannot be maintained, increasing the level of output power of the transmitter until reliable communications are established as indicated by signals returned from another unit in the communications system, and wherein the mode control unit changes the output frequency of the transmitter from a single frequency mode to a time division spread spectrum mode if the required power output level of the transmitter exceeds a first predetermined threshold (See Fig. 4A-B; Col. 1, lines 51 plus).

One skilled in the art would have recognized the need for effectively and efficiently facilitates operating in the non-frequency-hopping fashion in an environment where the frequency-hopping fashion is also used, and would have applied Foster, Jr's mode control nit of a communication unit, and Souissi's novel use of dynamic spectrum allocation for transmission of data within a frequency band into Maahany's hierarchical communications system using frequency hopping. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Foster, Jr's cordless telephone system having automatic control of tranbsmitter power and frequency in response to changing conditions, and Souissi's method and apparatus for dynamic spectrum allocation into Mahany's hierarchical communications system using microlink, data rate switching, frequency hopping and vehicular local area networking with the motivation being to provide a method and system for allocation of an adaptive transmission channel in a piconet operating in the Bluetooth radio frequency band.

Allowable Subject Matter

7. Claims 5-10, 17 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is an examiner's statement of reasons for the indication of allowable subject matter: The prior art of record fails to disclose or suggest wherein the step of providing the first slave device a plurality of measurement parameters, including measurement time and frequencies to be measured, wherein the first slave device measures the channel conditions based on the measurement parameters; wherein the step of providing the master device a measurement report including results of the channel condition measurements, specifically recited in claims 5, 6,17 and 23.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Souissi et al.(US#2002/0009158) discloses a method and apparatus for dynamic spectrum allocation.

Souissi et al. (US# 2002/0075941) discloses a multiple access frequency hopping network with interference anticipation.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION THIS ACTION IS MADE FINAL**. See MPEP ' 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (571) 272-3149. The examiner can normally be reached on Mon - Fri from 6:00 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

12. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to: (703) 305-9051, (for formal communications intended for entry)

Or: (703) 305-3988 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Mphan

10/15/2004.